KUZ'MINYKH, I.N. [deceased]; RODIONOV, A.I.

Hydrodynamic testing of bubble, grid and tubular reflux-type plates.
Izv.vys.ucheb.zav.; khim.i khim.tekh. 2 no.1:126-133 '59.
(MIRA 12:7)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I.
Mendeleyeva, kafedra tekhnologii mineral'nykh kislot i soley.
(Distillation apparatus--Testing)

SOV/124-58-2-1940

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 2, p 60 (USSR)

AUTHORS: Balitskiy, Kh. A., Rodionov, A. I.

TITLE: Behavior of a Ship While Anchored (Povedeniye sudna na yakore)

PERIODICAL: Inform. sb. Tsentr. n.-i. in-t morsk. flota, 1957, Nr 14, pp 69-73

ABSTRACT: Bibliographic entry

Card 1/1

Name: RODIONOV, A. I

Wrote article on the power supply for microphones used with the UP-3, UP-6 and
UP-3/5 amplifiers. Power is supplied either by storage or dry batteries. When
AC is available the microphone battery is replaced by special rectifiers. This
article is of a semi-technical nature.

REF: R. F. #13, pg 50, col 2, 1937

Radio Front

155199

RODIONOV, A.

USSR/Radio - Radio Receivers   Jan 50
              Communications

"Start Made by Members of the Komsomol in Radiofica-
tion," A Rodionov, Secy, Omsk Oblast Committee, All-
Union Lenin Young Communist League (VLKSM), 2 pp

"Radio" No 1

Gives figures for work done by Komsomol members in
introducing radio receivers in various rayons and
kolkhozes of Omsk Oblast. Stresses role of Komsomol
in training 5,000 public instructors in 1949 in con-
junction with oblast communications offices, in or-
ganizing kolkhoz radiofication and maintenance pro-
grams, etc.
                                                 155199

RODIONOV, A. I., Aspirant --

"The Transmission of Material Through Sieve Plates at Various Inclinations." Cand Tech Sci, Moscow Order of Lenin Chemicotechnological Inst imeni D. I. Mendeleyev

Survery of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (10)

SO: Sum. No. 481, 5 May 55

KUZ'MINYKH, I.N., professor, doktor tekhnicheskikh nauk; AKSEL'ROD, L.S.,
   kandidat tekhnicheskikh nauk; KOVAL', Zh.A., kandidat tekhnicheskikh nauk;
   RODIONOV, A.I.

   Coefficients of transformation of the mass on horizontal perforated
   plates under various gas speeds. Khim.prom. no.2:86-89 Mr '54. (MIRA 7:6)

   1. Moskovskiy khimiko-tekhnologicheskiy institut [im. D.I.Mendeleyeva]
   VNIIKIMASh.   (Gases--Absorption and adsorption)

RODIONOV, A.I.

USSR/Processes and Equipment for Chemical Industries   K-1
          Processes and Apparatus for Chemical Technology

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 14178

Author   : Kuz'minykh I.N., Rodionov A.I.
Title   : Mass Transfer at Screen Plates on Different Inclination
             of Same

Orig Pub : Zh. prikl. khimii, 1956, 29, No 9, 1330-1336

Abstract : Investigation of the effects of the process parameters
             and inclination of screen plates on coefficient of mass
             transfer through gaseous $k_G a$ and liquid $k_L a$ phases. Ex-
             periments were carried out with plates 700x85 mm made
             of sheet steel 2 mm thick, with hole diameters of 2, 4
             and 6 mm and spacing of 7-21 mm, maintained in horizontal
             position and also at angles of 3 and 5° in relation to
             the horizontal plane. A study was made of the process
             of concurrent evaporation of water and oxygen desorption
             under isothermic conditions; temperature of water was

Card 1/2   - 16 -

5(1)

AUTHORS: Kuz'minykh, I. N., (Deceased),   SOV/153-58-3-15/30
              Yakhontova, Ye. L., Rodionov, A. I.,
              Yermakova, Ye. I.

TITLE: Drying of Superphosphate in a Boiling Layer   (Podsushka
              superfosfata v kipyashchem sloye)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i
              khimicheskaya tekhnologiya, 1958, Nr 3, pp 80 - 85 (USSR)

ABSTRACT: The superphosphate produced in Soviet factories from apatite
              (continuous method) contains $19.3 - 19.9\%$ assimilable P_2O_5,
              including $10 - 12\%$ H_2O. As 1% H_2O corresponds to 0.2% P_2O_5,
              the removal of the humidity would increase the content of
              useful substance which again offers further advantages.
              Superphosphate may, however, not be overheated, as tempera-
              tures above $130 - 150°$ retransform part of the P_2O_5 into a
              non-assimilable form. The method of the boiling layer sug-
              gested in this paper could also be used for the purpose
              mentioned. The lack of references in this field stimulated
              this work. In this method the heat exchange takes place

Card 1/4

Drying of Superphosphate in a Boiling Layer   SOV/153-58-3-15/30

intensely and the whole substance scattered over the grating
has the same temperature. In the present paper the degree
of the drying of superphosphate as dependent on temperature
and the duration of the blowing out with air is to be deter-
mined, and it is to be made clear to which extent the degree
of drying depends on the content of free P_2O_5. As far as

the ripening represents a bottleneck of modern superphosphate
production it would be interesting to find out whether the
ripening reaction is not accelerated in the boiling layer.
Therefrom it could be concluded which superphosphate (fresh
or ripened) is suited better for blowing out by air. The
first experimental stage was carried out on a laboratory
basis (Fig 1). Then the experiments were continued at the
Voskresenskiy Khimkombinat (Voskresensk Chemical Kombinat).
Results obtained showed the authors   that the method of the
boiling layer is a simple and good means of afterdrying the
superphosphate ready for shipment. Especially the waste
gases of the sulfuric acid plants (the completely anhydrous
ones from contact systems or those with a low water content
of the tower systems) may be used for this purpose. The

Card 2/4

Drying of Superphosphate in a Boiling Layer   SOV/153-58-3-15/30

additional expenditure for the afterdrying of the super-
phosphate is probably the least expensive one with the method
of the boiling layer. On the other hand, the transport
means are relieved by about 7% and the transport costs of
a then more valuable fertilizer per unit of useful substance
are decreased. The possibility of simultaneously neutralizing
the free P_2O_5 by ammonia seems possible. This would further
increase the quality of the fertilizer. The authors draw
the following conclusions from their results: The humidity
content decreases in superphosphate with the decrease of the
content of free P_2O_5 and with the increase in temperature:
at $40°$ the humidity was removed to 50%, at $50°$ to two thirds.
After 5 - 10 minutes the drying is finished. No perceivable
variations of the degree of ripening are noticed during the
drying of superphosphate. A more intense drying delays the
ripening during the subsequent storing. The treatment with
air in the boiling layer (without evaporation of the humidity)
does also not accelerate the ripening. In spite of a consider-
able humidity content superphosphate is easily brought into
Card 3/4   the pseudo-liquefying state. The bigger the amount of

Drying of Superphosphate in a Boiling Layer   SOV/153-58-3-15/30

> superphosphate on the grating the higher is the gas velocity
> in the apparatus required to form a pseudo-liquefied layer.
> There are 5 figures.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut imeni D. I.
               Mendeleyeva (Moscow Institute of Chemical Technology imeni
               D. I. Mendeleyev); Kafedra tekhnologii mineral'nykh kislot i
               soley (Chair of the Technology of Mineral Acids and Salts)

SUBMITTED: October 12, 1957

Card 4/4

`5(1)
AUTHORS: Kuz'minykh, I. N. (Deceased),   SOV/153-2-1-23/25
                Rodionov, A. I.

TITLE: Hydrodynamic Tests of the Bubbling, Fire Grate Bar
                and Tube Grids of the Downfall Type (Gidrodinamicheskiye
                ispytaniya barbotazhnykh, kolosnikovykh i trubchatykh
                reshetok proval'nogo tipa)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i
                khimicheskaya tekhnologiya, 1959, Vol 2, Nr 1, pp 126-133 (USSR)

ABSTRACT: It was already mentioned (Refs 1, 2) that in designing
                bubbling apparatus special attention is devoted to plates of
                the downfall (proval'nyy) type: sieve-like (Ref 2), fire
                grate bars (kolosnikovyye) as well as plates consisting of
                tubes. The article under review gives a description of the
                continuation of the experiments made by the author on
                hydrodynamic tests of the two last-mentioned types. A. Fire
                grate bar grid. Figure 1 illustrates the dependence of the
                resistance coefficient on the plate thickness for both types.
                The hydrodynamic conditions of the fire grate bar plates are
                similar to those of sieve-like plates. The two last-mentioned
Card 1/4   types operate irregularly under small gas loads, i. e. not

Hydrodynamic Tests of the Bubbling, Fire Grate Bar   SOV/153-2-1-23/25
and Tube Grids of the Downfall Type

with their total surface. As soon as the gas velocity is
increased the bubbling stretches over the entire surface
and the foam layer on the plate grows. The thickness of
the foam layer depends on the gas velocity, the wetting
density, and the size of the orifices and the free cross
section of the grid. The wetting density required for
regular operation of the plates is inversely proportional
to the gas velocity. With equal free cross section and equal
gas velocity these plates differ by their capability of
retaining liquids. The downfall increases as soon as the
orifice is widened without changing the free cross section.
The same change is produced by increasing the height of the
grids. Table 1 contains comparative data on the resistance
(P) and the height of the foam layer (H) of both types of
plate under discussion with equal height of the plates (5 mm),
equal free cross section (f), and equal wetting density (L).
Hence it follows that the bubbling (foam) layer on sieve
plates is somewhat higher, but the resistance is simultaneously
changed. Apparently, the amount of liquid on the plate increases.

Card 2/4   The hydrodynamic indices indicate that both types of plate are

Hydrodynamic Tests of the Bubbling, Fire Grate Bar   SOV/153-2-1-23/25
and Tube Grids of the Downfall Type

virtually equivalent. Figure 3 contains comparative data on
the operation of fire grate bar plates with equal free cross
section (23 %) and different size of the orifices. Plates of
orifices with a diameter of 3 - 4 - 5 mm are equivalent from
the hydrodynamic point of view. However, each type of these
plates has an individual capability of retaining liquids and
an individual favorable load range. An increase in the free
cross section of plates with equal orifices (3 mm) results
invariably in a rapid loss of the liquid (at equal gas load).
The resistance is reduced accordingly (Fig 4). In order to
maintain the foam layer on the same level, the existent gas
velocity in the orifices must be maintained, that is to say,
it is necessary to increase the gas load. The foam density
decreases with rising velocity. The height of the foam layer
H mm can be determined according to figure 5. The resistance
is considerably improved by increasing the height of the
grids (Fig 6). Figure 7 illustrates the profiles of the fire
grate bar for bubbling grids. Under equal conditions of
operation the foam layer on sieve plates is higher than in
Card 3/4   the case of the other plates. The tube grids possess higher

Hydrodynamic Tests of the Bubbling, Fire Grate Bar   SOV/153-2-1-23/25
and Tube Grids of the Downfall Type

capability of downfalling than the other two types. For the
purpose of producing a foam layer hereupon, much heavier
loads with gas and liquid are necessary. In the presence of
a foam layer the grid resistance may be expressed as two
summands: (a) resistance of the dry grid; (b) product from the
height of the foam layer multiplied by their density. There
are 8 figures, 3 tables, and 3 Soviet references.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut imeni D. I.
Mendeleyeva; Kafedra tekhnologii mineral'nykh kislot i soley
(Moscow Institute of Chemical Technology imeni D. I.
Mendeleyev; Chair of Technology of Mineral Acids and Salts)

SUBMITTED: December 13, 1957

Card 4/4

5(1)

AUTHORS: Kuz'minykh, I. N., (Deceased),   SOV/153-2-2-27/31
               Rodionov, A. I., Mishchenko, Yu. S.

TITLE: Absorption of the Nitrogen Oxides in a Bubbling Column With
               a Varying Number of Plates. (Absorbtsiya okislov azota v
               barbotazhnoy kolonke s raznym chislom tarelok)

ABSTRACT: The authors have established by their previous experiments
               with columns, that the degree of absorption on three plates
               is only slightly higher than on one plate (Refs 1-4). Two
               series of experiments were carried out. Their results are
               shown in figure 1 as two nearly parallel curves. Hence it
               follows that in both series the greater number of plates
               led to the increase of the total degree of absorption.
               Furthermore, the efficiency-coefficient was computed for
               the entire column and for each plate separately. The change
               of the efficiency-coefficient with the increase in the number of
               plates is shown in figure 1 (curves 4,5). From this it
               appears that in spite of the increase of the total degree of
Card 1/3   absorption, the efficiency-coefficient decreases rapidly for

Absorption of the Nitrogen Oxides in a Bubbling   SOV/153-2-2-27/31
Column With a Varying Number of Plates.

each individual plate. The kinetic indices of the work of
the absorbent, when wetted with a 10 % soda-solution, are
shown in table 1. It follows from its data that the intensi-
ty of the work of the absorbent must be trebled, according to
the kinetic equation $k\tau = \lg 31 - \eta_k$, when the degree of

purification of   gas from nitrogen oxides is doubled, for
example from 40 to 80 %. One is inclined to ask why the in-
crease in the plate-number in the absorber deteriorates the
working indices of individual plates. To this the authors
reply that besides the usual factors, a factor like the
"freshness" of the solution reaching the plate as a wetting
agent, also becomes important. It is not a question of the
solution being spent or containing various amounts of soda,
but only of the presence of greater or smaller amounts of
intermediate products which retard the absorption. The
simplest way of increasing the "freshness" of the solution
is to increase the wetting density. For the purpose of
sanitary cleaning, a fresh supply can prove to be useful
not only on the upper plate, but on all plates at the same
Card 2/3   time. Experiments were made to prove this. Despite a

Absorption of the Nitrogene Oxides in a Bubbling   SOV/153-2-2-27/31
Column With a Varying Number of Plates

> varying wetting density on the plates, the test results are
> grouped with sufficient accuracy around a curve (Fig 1,
> curve 3). The type of   plates is also important (plate
> with a gap - proval'nyye and crossed - perekrestnyye plates =
> plates on which the gas- and liquid-stream meet at an angle
>   of 90°). Cross plates enable the reduction in the number
> of plates in the column at the same degree of absorption.
> There are 3 figures, 2 tables, and 8 Soviet references.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut imeni
               D. I. Mendeleyeva; Kafedra tekhnologii·mineral'nykh kislot
               i soley (Moscow Chemical-technological Institute imeni
               D. I. Mendeleyev; Chair of Technology of Mineral Acids and
               Salts)

SUBMITTED: June 4, 1958

Card 3/3

RODIONOV, A. I.; KASHNIKOV, A. M.; RADIKOVSKIY, V. M.

"Determination of the phase contact surface and the heat- and mass-transfer coefficients for turbogrid sieve plates."

report submitted for 2nd All-Union Conf on Heat & Mass Transfer, Minsk, 4-12 May 1964.

Moscow Chemical Technology Inst.

KASATKIN, A.G.; RODIONOV, A.I.; KASHNIKOV, A.M.

Hydrodynamic testing of plates with two kinds of perforation.
Trudy MKHTI no.40:70-73 '63.

(MIRA 18:12)

RODICHOV, A.I.; MISHCHENKO, Yu.S.; KLIMOV, A.P.; BOGDANOV, E.A.

Absorption of nitrogen oxide by limestone suspensions. Trudy
MKHTI no.40:74-77 '63.   (MIRA 18:12)

L. 27224-66   EWT(d)/EWP(h)/EWP(1)

ACC NR: AM6002134   Monograph   UR/

Rodionov, A. I.; Udalov, V. I.; Shchegolev, V. I.

Means for maneuvering seagoing vessels (Sredstva manevrirovaniya morskikh sudov)
  Moscow, Izd-vo "Transport," 1965. 100 p. illus., biblio. 3000 copies printed.

TOPIC TAGS: marine engineering, shipbuilding engineering, ship navigation, naviga-
  tion training, navigation equipment, ship component, ship propeller, vertical axis
  propeller

PURPOSE AND COVERAGE: This book is intended for the ship's company of seagoing
  vessels and may be of interest to members of the river fleet; it may also be used
  by designers engaged in the development of maneuvering methods and systems, and by
  students in naval academies studying seamanship. The book, from the point of view
  of seamanship, describes the principles of operation and design feature of maneuver-
  ing systems, and gives examples of their use in making maneuvers necessary to the
  operation of a vessel. Information is presented on means for controlling maneuver-
  ing along with trends in the development of these means. Also described are the
  maneuvering systems installed on modern vessels and the tendency towards centralized
  control of vessel maneuvering.

TABLE OF CONTENTS:

Card 1/3   UDC: 1.075:629.123
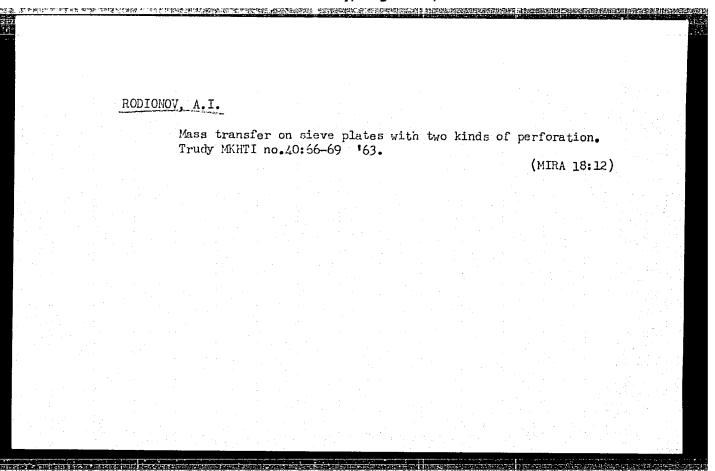
L 27224-66

ACC NR: AM6002134   0

Ch. I.   Means of maneuvering seagoing vessels — 5
  1.   Maneuvering elements of a seagoing vessel — 5
  2.   The effect of various factors on vessel maneuverability — 14
  3.   The "rudder-screen" complex as a maneuvering means — 17
  4.   The interaction of forces under various motion conditions of a vessel — 20
  5.   The interaction of forces as a vessel turns under conditions of wind
       influence — 27
  6.   Anchor and mooring equipment as maneuvering means for a single-screw vessel —30
  7.   Maneuvering a vessel with tugboats — 32
  8. .Maneuverability of a multiple-screw vessel — 33

Ch. II.   Means of improving the maneuverability of seagoing vessels — 36
  1.   Inadequacies of the "rudder-screen" complex — 36
  2.   Variable-pitch propellers — 37
  3.   Guide vanes — 46
  4.   Counter-rotating propellers and stremlined rudders — 49
  5.   Rudder fairings — 51
  6.   Active rudders — 53
  7.   Vertical-axis (Voight-Schneider-type) propellers — 55
  8.   Bow-mounted lateral maneuvering systems — 61
  9.   Trends in the further improvement of the maneuvering qualities of vessels — 73

Ch. III.   Means of controlling the maneuvers of seagoing vessels — 74

Card   2/3

L 27224-66

ACC NR: AM6002134   0

1. Wheelhouse and bridge — the principal point for controlling vessel
   maneuvers — 74.
2. Vessel-motion control equipment — 79
3. Prospects in automating the control of vessel maneuvers — 94

References — 100.

SUB CODE: 13/ SUBM DATE: 10Jun65/ ORIG REF: 021/ OTH REF: 018/

Card 3/3 ll

RODIONOV, A.I.; RADIKOVSKIY, V.M.

Effect of the temperature of a foamy layer on mass transfer
coefficients in a downcomerless sieve plate. Trudy MKHTI
no.40:57-60 '63.

Testing of downcomerless sieve plates in the presence of
surface-active substances. Ibid.:61-65

(MIRA 18:12)

RODIONOV, A.I.

Mass transfer on sieve plates with two kinds of perforation.
Trudy MKHTI no.40:66-69 '63.

(MIRA 18:12)

RODIONOV, A.I.; KASHNIKOV, A.M.

Determination of the contact surface of phases and mass transfer coefficients in the liquid phase on sieve plates. Zhur. prikl. khim. 38 no.5:1063-1068 My '65.   (MIRA 18:11)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I. Mendeleyeva.

RODIONOV, A.I.; KASHNIKOV, A.M.; RADIKOVSKIY, V.M.

Determination of the interfacial area in the gas - liquid system
on contact plates. Khim. prom. 40 no.10:737-741 O '64.
                                         (MIRA 18:3)

RODIONOV, A.I.; KASHNIKOV, A.M.; RADIKOVSKIY, V.M.

Determining the number of plates in the absorption column by
the surface of the phase contact. Trudy MKHTI no.47:5-10 '64.
(MIRA 18:9)

KONONOV, A.I.; UDALOV, V.I.; JEREMEEV, V.I.; SIMYAKOVA, L.A.,
red.

[Maneuvering devices of seagoing vessels] Sredstva manevri-
rovaniia morskikh sudov. Moskva, Transport, 1965. 100 p.
(MIRA 18:9)

RODIONOV, A.I.; RADIKOVSKIY, V.M.

Calculation of downcomerless plates in the presence of surface-
active substances. Zhur. prikl. khim. 37 no.6:1380-1383 Je '64.
(MIRA 18:3)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I. Men-
deleyeva.

ABRAMOV, A.I.; LAZAREV, A.M.:

Determination of the interface on components sieve plates.
Zhur. prikl. khim. 38 no.1:143-14? Ja '65.

(MIRA 18:3)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni Mendeleyeva.

RODIONOV, A.I.; RADIKOVSKIY, V.M.

Influence of the viscosity of liquids on mass transfer coefficients
on a downcomerless sieve plate. Zhur. prikl. khim. 37 no.8:1757-
1761 Ag '64.   (MIRA 17:11)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni Mendeleyeva.

RODIONOV, Aleksandr Ivanovich; KEYLIN, Rudol'f Solomonovich,
inzh., nauchn. red.; GORYANSKIY, Yuriy Vladimirovich,
red.; KOTLYAKOVA, O.I., tekhn. red.

[Methods and equipment for automatic control in naviga-
tion] Metody i tekhnicheskie sredstva avtomatizatsii su-
dovozhdeniia. Leningrad, Izd-vo "Morskoi transport,"
1963. 128 p.   (MIRA 17:1)

RODIONOV, A.I.; KASHNIKOV, A.M.

   Testing of a downcomerless tray at various angles of inclination.
   Zhur. prikl. khim. 36 no.8:1737-1743 Ag '63.   (MIRA 16:11)

   1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I.
   Mendeleyeva.

RODIONOV, A.I., kand.tekhn.nauk

Principles of introducing automatic control of ship sailing
on a given program. Inform.sbor.TSNIIMF no.66 Sudovozh.i sviaz'
no.17:16-25 '61.   (MIRA 16:2)
          (Electronics in navigation)
          (Programming (Electronic computers))

FAVOROV, P.A.; BONDARENKO, A.S.; SHUTKIN, L.N.; RODIONOV, A.I.,
        kontr-admiral, red.; MARCHENKO, V.G., red.; BERDNIKOVA,
        N.D., red.-leksikograf; KUZ'MIN, I.F., tekhn. red.

        [English-Russian dictionary on submarines and anti-
        submarine defense]Anglo-russkii slovar' po podvodnym lodkam
        i protivolodochnoi oborone. Pod red. A.I.Rodionova. Mo-
        skva, Voenizdat, 1963. 260 p.   (MIRA 16:3)
            (Submarine warfare--Dictionaries)
         (English language--Dictionaries--Russian)

BELYAYEV, V.V., inzh.-kapitan pervogo ranga; BEREZOVSKIY, V.N., kapitan
pervogo ranga; KVITNITSKIY, A.A., kapitan pervogo ranga;
KOVALEV, A.P., kapitan pervogo ranga zapasa: RODICHOV, A.I.,
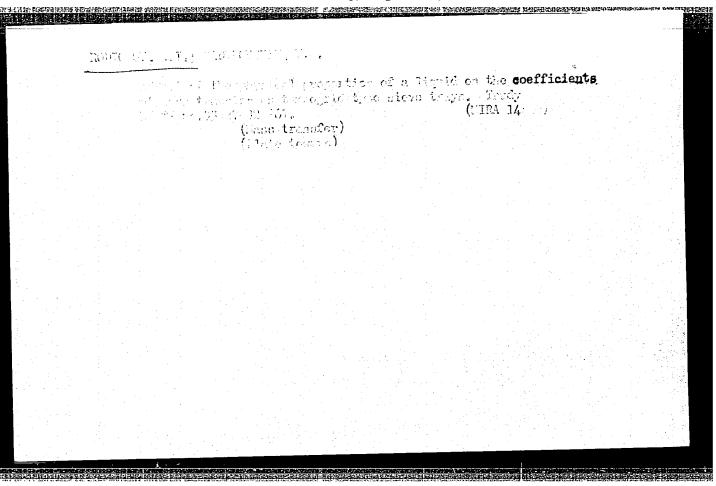kontr-admiral, red.; MASLOVA, N.Ya., tekhn. red.

[Antisubmarine defense in modern warfare; collection of trans-
lated articles]Protivolodochnaia oborona v sovremennoi voine;
sbornik perevodnykh statei. Moskva, Voenizdat, 316 p.
(MIRA 15:10)

(Submarine warfare)

GERASIMOV, Vladimir Nikolayevich; DROBLENKOV, Viktor Feoktistovich;
   RODIONOV, A.I., retsenzent; VASIL'YEV, B.F., retsenzent;
   ANTONOV, D.A., retsenzent; IVANOV, A.P., red.; KRASAVINA,
   A.M., tekhn. red.

   [Submarine boats of imperialist countries]Podvodnye lodki im-
   perialisticheskikh gosudarstv. Izd.2., dop. Moskva, Voenizdat,
   1962. 301 p.   (MIRA 15:9)
        (Atomic submarines)   (Submarine boats)

the coefficients

(MIRA 14

(mass transfer)

RODIONOV, A.I.

Absorption of nitrogen oxides by water on sieve plates. Izv.
vys.ucheb.zav; khim. i khim.tekh. 4 no.5:806-810 '61. (MIRA 14:11)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni Mendeleyeva,
kafedra tekhnologii neorganicheskikh veshchestv.
            (Nitrogen oxide)   (Absorption)
                    (Plate towers)

RODIONOV, A.I.; MARCHENKOV, V.F.

Mass transfer on sieve plates with two perforations. Zhur. prikl. khim. 33 no.9:2029-2035 S '60.   (MIRA 13:10)

1. Moskovskiy khimiko-tekhnologicheskiy institut im. D.I. Mendeleyeva.

(Mass transfer)   (Plate towers)

RODIONOV, A. I., MARCHENKOV, V.F.

Testing sieve plates with two perforations. Zhur.prikl.khim. 33
no.5:1101-1108 My '60.   (MIRA 13:7)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni
D.I. Mendeleyeva.
                        (Plate towers)

KUZ'MINYKH, I.N. [deceased]; RODIONOV, A.I.; MISHCHENKO, Yu.S.

Absorption of nitrogen oxides in a bubble-cap column with
different numbers of plates. Izv. vys. ucheb. zav.; khim.
i khim. tekh. 2 no.2:287-293 '59.   (MIRA 12:9)

1.Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I.
Mendeleyeva. Kafedra tekhnologii mineral'nykh kislot i soley.
         (Nitrogen oxides) (Plate towers)

RODIONOV, A.K.; NEL'ZIN, V.I., nauchnyy sotrudnik

Specialization and cooperation of the sawmilling and wood-
working industry in Krasnoyarsk Territory. Trudy VSNIPILesdrev
no.8:38-48 '63.   (MIRA 18:11)

RODIONOV, A.K.; LEL'CHUK, V.I.; BOLKHOVA, A.A., red.

[Analysis of the transportation costs of hauling forest products from Krasnoyarsk Territory] Analiz transportnykh izderzhek po vyvozu lesnoi produktsii iz Krasnoiarskogo kraia. Moskva, TSentr. nauchno-issl. in-t. tekhn. informa- tsii i tekhniko-ekon. issl. po lesnoi, tselliulozno- bumazhnoi, derevoobrabatyvaiushchei promyshl. i lesnomu khoz., 1963. 18 p.   (MIRA 17:10)

RODIONOV, A.K.; LOKSHIN, I.M., inzh.

Mechanization of the processing and dispatching of newspapers in the post office of Leningrad. Vest. sviazi 22 no.11:13-14 N '62.   (MIRA 16:12)

1. Glavnyy inzh. Leningradskogo pochtamta (for Rodionov).
2. Proizvodstvenno-tekhnicheskaya laboratoriya Leningradskogo pochtamta (for Lokshin).

RODIONOV, A.K.; NEL'ZIN, V.I., nauchnyy sotrudnik

Analyzing the export of forest products from the Krasnoyarsk
Economic Region. Trudy VSNIPILesdrev no.9:37-44 '64.
(MIRA 18:11)

RODIONOV, A.M., kand. tekhn. nauk; SHIPYIN, N.I., mladshiy nauchnyy sotrudnik

Obtaining chrome-tanning azo dyes on the fur. Nauch. inst. trudy
NIIMP no.12:22-29 '63.   (MIRA 17:11)

RODIONOV, A. M. (Engr)

RODIONOV, A. M. (Engr) --"Investigation of the Color Stability and the
Resistance to Heat of Dyed Furs During Dyeing by Oxidizing Agent
Dyes." Sub 12 Feb 52, Moscow Technological Inst of Light Industry
imeni L. M. Kaganovich. (Dissertation for the Degree of Candidate
in Technical Sciences)

SO: Vechernaya Moskva, January-December 1952

RODIC'OV, A. H.

Dyes and Dyeing - Fur

Means of increasing stability of dyes for furs.
Leg. prom. 12 no. 7, 1952.

9. Monthly List of Russian Accessions, Library of Congress, November 1952 1953, Uncl.

Rodionov, A. M.

Rodionov, A. M.: Krashenie mekha (Dyeing of Furs). Moscow, Gizlegprom. 1954. 216 pp. R. 8, K. 60. — CH

RODIONOV, A.M.; CHATSKIY, P.I.

Improving the technology of processing and dyeing sheep skins. Leg.
prom.15 no.1:16-18 Ja '55.   (MIRA 8:3)

1. Zamestitel' direktora NIIMP (for Rodionov). 2.Zaveduyushchiy
laboratoriyey krasheniya NIIMP (for Chatskiy).
     (Hides and skins)

RODIONOV, A.M.

Recent developments in the technology and techniques of the fur
industry. Leg.prom. 18 no.7:18-19 Jl '58.   (MIRA 11:9)

1.Zamestitel' direktora Nauchno-issledovatel'skogo instituta mekhovoy
promyshlennosti.
                        (Fur)

L 45391-66   EWT(d)   IJP(c)

ACC NR: AR6016608   SOURCE CODE: UR/0044/65/000/012/B049/B049

AUTHOR: Rodionov, A. M.

TITLE: Asymptotics of solutions of difference-differential-difference equations

SOURCE: Ref. zh. Matematika, Abs. 12B261

REF SOURCE: Sb. Tr. Seminara po teorii differents. uravn. s otklon. argumentom. T. 3. M., 1965, 204-213

TOPIC TAGS: asymptotic solution, difference equation

ABSTRACT: The author establishes an asymptotic expansion in T of the solution $y(t,h,T)$ of the system

$$\frac{\partial y(t,h)}{\partial t} = a(t,h)y(t,h) + b(t,h)y(t,h-\tau) + \omega(t,h), \quad (1)$$

with initial conditions
$$y(t,h) = y_0(t,h), \quad -\tau < h < 0, \quad 0 < t < T;$$
$$y(0,h) = y_0(0,h), \quad h > -\tau \quad (2)$$

$0 < T \leq T_0$ is a small quantity, for the functions a, b and y_0 satisfying certain smoothness conditions in h. V. Petukhov [Translation of abstract]

SUB CODE: 12

UDC: 517.949.2

Card 1/1

ACC NR: AR6035228   SOURCE CODE: UR/0372/66/000/008/G013/G013

AUTHOR: Rodionov, A. M.; Toroptsov, V. S.

TITLE: Method of determining the optimal adjustments of linear automatic control systems with unstable objects with delay

SOURCE: Ref. zh. Kibernetika, Abs. 8G78

REF SOURCE: Sb. Avtomatiz. khim. i neftekhim. proiz-v. Vyp. 2, M., 1066, 20-28
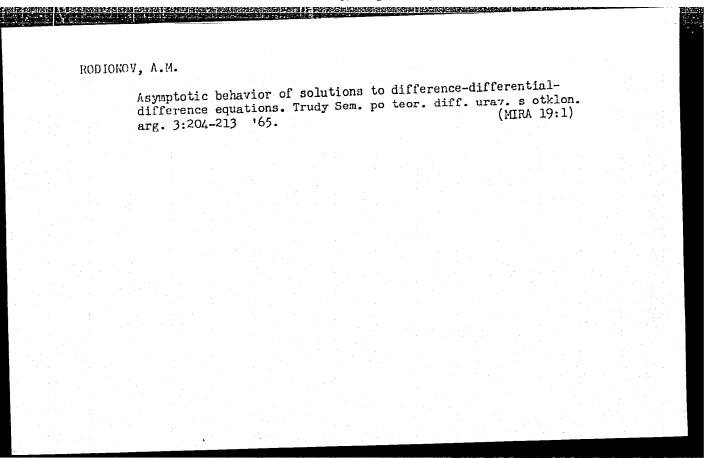
TOPIC TAGS: linear automatic control, perturbation method, optimal adjustment, controller

ABSTRACT: A scheme for constructing an approximate analytical solution by the perturbation method was discussed for the equation $\dot{x}(t), -f(t, x(t)x(t-\tau))$ (τ is a small constant lag). The scheme may be extended for use in high-order equations. The limits of changes in τ for possible application of the equations obtained is explained, and recommendations for their use are given. The use of a digital computer for calculating the optimal adjustments using the equations cited

Card 1/2   UDC: 62-5.002.73

ACC NR: AR6035228

is suggested. The above relations have been obtained as a result of studies on the transient of second-order pattern systems with pneumatic and self-actuated controllers. The original article has 2 figures. Bibliography of 9 titles. [Translation of abstract] [NT]

SUB CODE: 12/

Card 2/2

RODIONOV, A.M.

Asymptotic behavior of solutions to difference-differential-
difference equations. Trudy Sem. po teor. diff. urav. s otklon.
arg. 3:204-213 '65.   (MIRA 19:1)

RODIONOV, A.M.

Asymptotic methods as applied to boundary value problems with delayed arguments in the case of small delays. Vest. Mosk. un. Ser.1: Mat., mekh. 20 no.3:12-19 My-Je '65.   (MIRA 18:9)

1. Kafedra matematiki fizicheskogo fakul'teta Moskovskogo gosudarstven- nogo universiteta imeni M.V.Lomonosova.

RODIONOV, A.M.

Periodic solutions to nonlinear differential equations with time lag. Trudy Sem. po teor. diff. urav. s otklon. arg. 2:200-207 '63.

(MIRA 18:2)

RODIONOV, A.M.

Improve the supplying of the fur industry with materials and
equipment. Kozh.-obuv.prom. 6 no.11:7-9 N '64.

(MIRA 18:4)

L-52732-65   EWT(d) IJP(c)   UR/0055/65/000/003/0012/0019
ACCESSION NR: AP5014094

AUTHOR: Rodionov, A. M.

TITLE: Asymptotic methods applied to boundary value problems with delaying argument in the case of small delay

SOURCE: Moscow. Universitet. Vestnik. Seriya, 1. Matematika, mekhanika, no. 3, 1965, 12-19

TOPIC TAGS: differential equation, difference equation

ABSTRACT: The author obtains asymptotic formulas in small T for the eigenfunctions and eigenvalues of

$$x''(t) + \lambda x(t) + M(t) x(t-\tau) = 0 \tag{1}$$

$$x(0) = 0, \quad x(t) = 0, \tag{2}$$

$$x(t-\tau) = 0, \quad \text{if} \quad t-\tau < 0 \tag{3}$$

He constructs the asymptotics of the solution of the boundary value problem

$$x''(t) + \lambda x(t) + M(t) x(t-\tau) = f(t), \tag{4}$$

$$x(0) = x(t) = 0; \quad x(t-\tau) = 0, \quad \text{if} \quad t-\tau < 0. \tag{5}$$

Card 1/2

L 52732-65
ACCESSION NR: AP5014094

"In conclusion I wish to thank A. B. Vasil'yev, S. B. Norkin, and L. E. El'sgol'ts
for their discussions of the work and their valuable advice." Orig. art. has: 22
formulas.

ASSOCIATION: Kafedra matematiki fizicheskogo fakul'teta, Moskovskiy gosudarstvennyy
universitet (Chair of Mathematics, Department of Physics, Moscow State University)

SUBMITTED: 12Nov63   ENCL: 00   SUB CODE: MA

NO REF SOV: 005   OTHER: 001

Card 2/2

ACCESSION NR: AP4024569   S/0208/64/004/002/0358/0363

AUTHOR: Rodionov, A. M. (Moscow)

TITLE: Application of perturbation methods to linear equations with distributed delay

SOURCE: Zhurnal vy*chislitel'noy matematiki i matematicheskoy fiziki, v. 4, no. 2, 1964, 358-363

TOPIC TAGS: linear differential equation, perturbation, delay differential equation, delay argument

ABSTRACT: The perturbation method developed by A. B. Vasil'yeva and A. M. Rodionov (Primeneniye metoda vozmushcheniy k uravneniyu s zapazdy*vayushchim argumentom v sluchaye malogo zapazdy*vaniya. Tr. seminara po teorii differ. ur-niy s otklonyayushchimsya argumentom. T.I.M., Izd-vo Un-ta druzhby* narodov, 1962, 20-27) is applied to the linear equation:

$$\frac{dx(t)}{dt} + \sum_{i=1}^{m} a_i(t) \int_0^\tau x(t-\theta)\, dg_i(\theta) = f(t), \quad x(t) = \varphi(t), \quad 0 \leqslant t \leqslant \tau.$$

Card 1/3

ACCESSION NR: AP4024569

The functions $a_i(t)$ and $f(t)$ have n continuous derivatives and $\varphi(t)$ has n+1 continuous derivatives. The function $g_i(\theta)$ is a function of bounded variation of the interval $[0, \tau_0]$ and $\tau \le \tau_0$, where τ_0 is sufficiently small. The equation

$$\frac{dx(t)}{dt} = \int_0^\tau x(t-\theta)\,dg(\theta), \qquad x(t) = \varphi(t), \qquad 0 < t < \tau,$$

is investigated. This differs from the general case only by more tedious computations. The following theorem is proved. The solution $x(t, \tau)$ of the latter equation, determined by the initial function

$$x(t) = \varphi(t) \text{ for } 0 < t < \tau,$$

has the asymptotic expansion:

$$x(t, \tau) = x_0(t) + \cdots + \frac{\tau^n}{n!} x_n(t) + (\tau^{n+1}),$$

where $|(\tau^{n+1})| < c\tau^{n+1}$, and c does not depend on t and $/\tau(n+2) < t < T$ $\tau < \tau_0$

Card 2/3

ACCESSION NR: AP4024569

The general case is proved by induction as in the work cited above. As an application, the equation

$$\frac{dx\,(t)}{dt} = -\frac{c}{\tau} \int_{0}^{\tau} x\,(t-\theta)\,(\tau-\theta)\,d\theta, \quad x(t) = \varphi(t), \quad 0 \leqslant t \leqslant \tau$$

is considered. Its solution is

$$x(t) = \varphi(0) + \tau\left(\varphi'(0) - \frac{c}{2}\varphi(0)t\right) + (\tau), \quad 3\tau \leqslant t \leqslant T.$$

"The author thanks A. B. Vasil'yeva, A. M. Zverkin and L. E. El'sgol'ts for their critical remarks." Orig. art. has: 43 equations.

ASSOCIATION: none

SUBMITTED: 29Dec62   DATE ACQ: 16Apr64   ENCL: 00

SUB CODE: MM   NO REF SOV: 002   OTHER: 002
Card 3/3

VASIL'YEVA, A.B.; RODIONOV, A.M.

Application of the method of perturbations to an equation with
delayed argument in the case of a slight delay. Trudy Sem. po
teor. diff. urav. s otklon. arg. 1:20-27 '62.   (MIRA 16:12)

RODIONOV, Aleksandr Mikhaylovich; KLOCHKOV, S.A., retsenzent;
KIAKHOVSKAYA, L.M., red.; BATYREVA, G.G., tekhn. red.

[Dyeing of fur] Krashenie mekha. Izd.2., perer. i dop.
Moskva, Gizlegprom, 1963. 261 p.   (MIRA 16:12)
          (Fur--Dressing and dyeing)

RODIONOV, A.M.; ZUBIN, A.M.; CHARUKHINA, Z.N.

Changes in the properties of the coat of hair of sheep pelts occurring
during the refining process. Kozh.-obuv.prom. 5 no.4:21-23 Ap
'63.   (MIRA 16:5)

(Fur--Dressing and dyeing)

RODIONOV, A.M. (Moskva)

Power series for solutions to differential equations with retarded
argument in terms of the small time lag. Prikl. mat. i mekh.
26 no.5:947-949 S-O '62.   (MIRA 15:9)
(Differential equations)

S/040/62/026/005/011/016
D234/D308

AUTHOR: Rodionov, A. M. (Moscow)

TITLE: Expansion of solutions of differential equations with
              retardation in powers of a small retardation

PERIODICAL: Prikladnaya matematika i mekhanika, v. 26, no. 5,
              1962, 947-949

TEXT: The author considers

$$x(t) = \varphi(t) \text{ on } E_0 \qquad (1.1)$$

and proves the following theorem. If the function f in the above
equation and the function $\varphi(t)$ have N continuous partial deriva-
tives with respect to each argument, then for any fixed $t^* > 0$ and
an arbitrarily large N there is a number $\tau^* = t^*/N$ such that
$x(t^*, \tau)$ will have N continuous derivatives with respect to τ in
the interval $0 \leq \tau < \tau^*$. The possibility of expanding $x(t,\tau)$ into a

Card 1/2

Expansion of solutions ...

S/040/62/026/005/011/016
D234/D308

Taylor series for sufficiently small τ follows from this. The expansion can be used for determining periodical solutions of systems

$$\frac{dx(t)}{dt} = f(t, x(t), x(t - \tau))$$

(2.1)

where x is a vector function and f has a period 2π in t. An example is given. N. N. Krasovskiy is mentioned for his contributions in the field. There is 1 figure.

SUBMITTED: April 6, 1962

Card 2/2

RODIONOV, A.M.

Scientific problems and prospects of the expansion of fur and sheep-
skin garment industries. Kozh.-obuv.prom. 3 no.11:22-23 N '61.
(MIRA 15:1)

1. Zamestitel' direktora Nauchno-issledovatel'skogo instituta
mekhovoy promyshlennosti, Moskva.
(Fur industry)

RODIONOV, A.M.

Development and introduction of new equipment and techniques in the fur industry. Kozh.-obuv.prom.3 no.3:14-17 Mr '61.
(MIRA 14:6)

1. Zamestitel' direktora Nauchno-issledovatel'skogo instituta mekhovoy promyshlennosti.
(Fur industry)

RODIONOV, A.M., kand.tekhn.nauk; SHLEYER, M.I., nauchnyy sotrudnik

Fur dyeing with azo dyes with the process of azo coupling of
aromatic diamines and aminophenols with diazotized hair. Nauch.-
issl.trudy NIIMP no.10:43-51 '60.

(MIRA 14:4)

(Fur--Dressing and dyeing)   (Azo dyes)

RODIONOV, A.M.

Basic trends in scientific research in the fur and sheepskin
industries. Leg.prom. 16 no.10:18-20 O '56.   (MIRA 10:12)

1. Zamestitel' direktora Nauchno-issledovatel'skogo instituta
mekhovoy promyshlennosti.
                              (Fur)

RODIONOV, A.M. (Moskva)

Quasilinear systems with a deviating argument of the neutral type.
Prikl. mat. i mekh. 24 no.6:1109-1111 N-D '60.   (MIRA 13:12)
        (Functional analysis)   (Vibrations)

88763

No.3500

S/040/60/024/006/017/024
C 111/ C 333

AUTHOR: Rodionov, A. M. (Moscow)

TITLE: Quasi-Linear Systems With Deviating Argument of Neutral Type

PERIODICAL: Prikladnaya matematika i mekhanika, 1960, Vol. 24, No. 6,
pp. 1109-1111

TEXT: The author considers the system

$$\frac{dx(t)}{dt} + \sum_{p=0}^{1} \sum_{j=1}^{q} a_{pj} x^{(p)}(t-\tau_j) = f(t) + \mu F(t, x(t), x(t-\tau_1), \ldots$$
$$\ldots, x(t-\tau_q), \mu)$$

or briefly

(1) $Ux = f + \mu F$,

where μ is a small parameter $x(t) = \{x_1(t), \ldots, x_n(t)\}$, $f(t) =$
$= \{f_1(t), \ldots, f_n(t)\}$, $F = \{F_1, \ldots, F_n\}$, $a_{pj} = \|a_{pjsk}\|$ (s,k=1,..,n).
Let F and f be continuous and have the period 2π in t. For sufficient-
ly small μ and for x(t), x(t-τ_j) from a domain G, F is assumed to
have continuous partial derivatives with respect to these arguments.

Card 1/ 4

88763
S/040/60/024/006/017/024
C 111/ C 333
Quasi-Linear Systems With Deviating Argument of Neutral Type

Let the coefficients be constant, the τ_j be constant and positive.
If the characteristic equation

$$(2) \quad \Delta(\lambda) = \left| \lambda(E + \sum_{j=1}^{q} a_{1j}e^{-\lambda\tau_j}) + \sum_{j=1}^{q} a_{oj}e^{-\lambda\tau_j} \right| = 0$$

of (1) has no integer frequencies, then one has the resonanceless
case.

Theorem 1: In the resonanceless case (1) has for sufficiently
small ω exactly one periodic solution (period 2π), which
passes over into the solution of the generating system

$$(3) \qquad Ux = f \quad \text{for } \omega = 0.$$

The proof is carried out with the aid of the contracting mapping.

Let (2) have a finite number of integer frequencies, and let

Card 2/4

88763

S/040/60/024/006/017/024
C 111/ C 333

Quasi-Linear Systems With Deviating Argument of Neutral Type

$\varphi_m = C_m \exp i N_m$ (m = 1,..., r) be the corresponding periodic
solutions of the homogeneous system $Ux = \theta$. The system (3)
possesses a periodic solution only if

$$(6) \qquad \int_0^{2\pi} \sum_{s=1}^{n} f_s(t)\, \varphi_{sm}^*(t)dt = 0 \qquad (m = 1,..., r)$$

is satisfied, where $\varphi_{sm}^*(t)$ are the periodic solutions of the
system

$$(5) \qquad \frac{d\,\varphi_m^*(t)}{dt} + \sum_{j=1}^{q} a_{1j}^* \frac{d\,\varphi_m^*(t+\tau_j)}{dt} - \sum_{j=1}^{q} a_{oj}^* \varphi_m^*(t+\tau_j) = 0 \quad \chi$$

$$(m = 1,..., r)$$

where a_{1j}^* and a_{oj}^* denote transposed matrices. Let

$$x_s^{\,o}(t) = \sum_{m=1}^{r} M_m^{\,o}\, \varphi_{sm}(t) + X_s(t)$$

Card 3/4

88763

S/040/60/024/006/017/024
C 111/ C 333

Quasi-Linear Systems With deviating Argument of Neutral Type

where $X_s(t)$ is a particulat solution of (3), be the solution of (3).

Theorem 2: In order that (1) possesses a solution $x(t,\mu)$ which passes over into the solution $x^o(t)$ of the generating system for $\mu = 0$, it is necessary that

(10) $\quad P_m^{\,o}(M_1^{\,o},\ldots,\,M_r^{\,o},0) = \displaystyle\int_0^{2\pi}\;\sum_{s=1}^{n}\;F_s(t,x^o(t),x^o(t-\tau_j),0)\,\varphi_{sm}^{*}(t)\,dt=0$

is satisfied. If moreover it holds $\cancel{X}$

(11) $\quad \dfrac{\vartheta\,(P_1^{\,o},\ldots,\,P_r^{\,o})}{\vartheta\,(M_1^{\,o},\ldots,\,M_r^{\,o})}\neq 0\ ,$

then (1) possesses a unique periodic solution which passes over into the solution of the generating system for $\mu = 0$.

The author mentions J.G.Malkin; he thanks L.E.El'sgol'ts for the subject. There are 4 Soviet references.

SUBMITTED: May 16, 1960

Card 4/4

RODIONOV, A.M.

Research on new methods of fur dyeing. Kozh.-obuv.prom. no.7:
18-20 Jl '59.   (MIRA 12:11)

1. Zamestitel' direktora Nauchno-issledovatel'skogo instituta
mekhovoy promyshlennosti (NIIMP).
                    (Fur--Dressing and dyeing)

RODIONOV, A.M.

Production potentialities of the fur industry for fulfillment
of the seven-year plan ahead of time. Kozh.-obuv.prom. 2
no.8:10-12 Ag '60.   (MIRA 13:9)

1. Ispolnyayushchiy obyazannosti direktora Nauchno-issledovatel'-
skogo instituta mekhovoy promyshlennosti.
                    (Fur)

KUTUKOV, A.I.,red.; GARKALENKO, K.I.,red.;GORBACHEV, I.V.,red.; YERMAKOV,
      P.I.,red.;OVSYANNIKOV, Yu.N.,red.;PILYUGIN, B.A.,red.;RODIONOV,
      I.S.,red.;RODIONOV, A.N.,red.;SEREBRIN, I.Ya.,red.; GUSEV, M.S.,
      red. izd-va,;PROZOROVSKAYA, V.L.,tekhn. red.; SABITOV, A.,teknn.red.

      [Uniform safety rules for geological surveying; compulsory for all
      ministries, economic councils,departments, organizations, and
      enterprises conducting geological studies] Edinye pravila bezopasnosti
      pri geologora zvedochnykh rabotakh; obiazatel'ny dlia vsekh ministerstv,
      sovnarkhozov, vedomstv, organizatsii i predpriiatii, vedushchikh
      geologicheskie raboty. Moskva, Ugletekhizdat, 1958. 102 p.(MIRA 11:12)

      1. Russia(1923- U.S.S.R.) Komitet po nadzoru za bezopasnym
      vedeniyem rabot v promyshlennosti i gornomu nadzoru.
                        (Geological surveys)

RODIONOV, A (N.)

AUTHORS: Rodionov, A., Shigorin, D., Talalayeva, T.,   62-1-28/29
                Kocheshkov, K.

TITLE: Letters to the Editor (Pis'ma redaktoru)

PERIODICAL: Izvestiya AN SSSR Otdeleniye Khimicheskikh Nauk, 1958, Nr 1,
                pp. 120-120 (USSR)

ABSTRACT: On the strength of the research of the infrared spectra of the
                compounds R - Li and R - O - Li the authors of this letter dis-
                covered the formation of an intermolecular lithium binding
                $\overset{-\delta}{C}$ $\overset{+\delta}{-Li}$....$\overset{-\delta}{C}$ $\overset{+\delta}{-Li}$.... and $\overset{-\delta}{O}$ $\overset{+\delta}{-Li}$....$\overset{-\delta}{O}$ $\overset{+\delta}{Li}$... A comparison of
                the spectra of the vapors, solvents, and powders in vaseline
                oil as well as an analysis of the kind of oscillation of the
                molecules made possible the precise determination of the fre-
                quency of the valent oscillations of the groups C--Li (of the
                free and those taking part in the formation of the lithium
                binding; see table). The intermolecular lithiumbinding
                $\overset{-\delta}{-C}$...$\overset{+\delta}{Li-}$ is constant. With the binding $\overset{+\delta}{-Li}$...$\overset{-\delta}{O-}$ the latter
                is, however, still more stable. The formation of especially
                resistent intermolecular lithium bindings has to be traced
Card 1/2   back to the peculiarity of the atom of the lithium: Small

Letters to the Editor   62-1-28/29

radius, comparatively small ionization potential, better
possibility of utilizing the -orbit. All this makes possible
a immediate more and more active taking part of its electron
in the intermolecular interaction than is the case with the
hydrogen atom. There is 1 table.

ASSOCIATION: Physico chemical Institute imeni L. Ya. Karpov (Fiziko-
               -knimicheskiy institut imeni L. Ya. Karpova).

SUBMITTED: December 20, 1957

AVAILABLE: Library of Congress

               1. Lithium-Molecular structure   2. Vaseline oil spectra-Analysis
               3. Infrared spectra-Applications

Card 2/2

AUTHORS: Rodionov, A. N., Shigorin, D. N.,   SOV/48-22-9-27/40
               Talalayeva, T. V., Kocheshkov, K. A.

TITLE: Infrared Absorption Spectra of Organolithium Compounds
               (Infrakrasnyye spektry pogloshcheniya litiyorganicheskikh
               soyedineniy) Intermolecular Lithium Binding (Mezhmole-
               kulyarnaya litiyevaya svyaz')

ABSTRACT: In this paper a report is given on the discovery and
               the investigation of the intermolecular lithium binding
               $-C^{-\delta} - Li^{+\delta} \ldots C^{-\delta} - Li^{+\delta} \ldots$ and $-O^{-\delta} - Li^{+\delta} \ldots O^{-\delta} - Li^{+\delta} \ldots$ which were
               based upon the study of the infrared spectra of compounds of
               the type R - Li and R - O - Li. The intermolecular
               lithium binding $-Li^{+\delta} \ldots C^{-\delta} -$ must be granted special
               importance because it can be formed without cooperation
               of the acceptor-donor interaction. The required compounds
               were synthetized and purified according to the method
Card 1/4   developed by Kocheshkov et al. (Refs 9,10). The spectra

Infrared Absorption Spectra of Organolithium Compounds. SOV/48-22-9-27/40
Intermolecular Lithium Binding

were recorded of vapors, solutions and powder in vaseline
oil (Figs 1,2). A comparison of the spectra and the
analysis of the nature of the oscillation of the molecules
permit to determine the frequencies of the valence
oscillations of free and of C-Li groups taking part in
the formation of the lithium binding (Table 2). The
intermolecular lithium binding $-\overset{-\delta}{C} \ldots \overset{+\delta}{Li}$ - is stable

$(\dfrac{\Delta \nu}{\nu_0}$ = 12 - 19%) notwithstanding the fact that it is
produced without cooperation of the acceptor-donor inter-
action. Even more stable is the binding $\overset{+\delta}{Li} \ldots \overset{-\delta}{O}$ -. As
was mentioned before, the $-\overset{+\delta}{Li} \ldots \overset{-\delta}{C}$- binding is formed
without the cooperation of the acceptor-donor interaction.
in this connection the problem of the nature of this bond
arises. It is known that the electrostatic interaction
is unable to explain completely the formation and the
properties of such molecular compounds. The explanation

Card 2/4   of this phenomenon can probably be sought in the particular

Infrared Absorption Spectra of Organolithium Compounds.   SOV/48-22-9-27/4o
Intermolecular Lithium Binding

        nature of the lithium atoms. It is possible that in the
        case under review the nature of the lithium bond can
        principally be explained by the immediate interaction
        of the electron from the lithium atom, which is in a
        p-state together with the "free part of the electron density"
        of the carbon atom and partly also by the dipole inter-
        action. There are 2 figures, 2 tables, and 14 references,
        11 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im.L.Ya.Karpova (Institute
        of Physical Chemistry imeni L.Ya.Karpov)

Card 3/4

5(2,3)

SOV/20-123-1-30/56

AUTHORS: Rodionov, A. N., Shigorin, D. N., Talalayeva, T. V., Kocheshkov, K. A., Corresponding Member, Academy of Sciences, USSR

TITLE: Infrared Spectra of Organolithium Compounds (Infrakrasnyye spektry litiyorganicheskikh soyedineniy) Intermolecular Lithium Bond (Mezhmolekulyarnaya litiyevaya svyaz')

ABSTRACT: The investigated absorption spectra were taken from the mentioned compounds of type Alk-Li and Ar-Li. In particular, methyl-, ethyl-, butyl-, dodecyl-, phenyl-, p-and o-tolyl as well as α-naphthyl lithium were studied. They were prepared and isolated according to a method previously described (Refs 1,2). In the spectrum of methyl lithium (Fig 1), 6 main frequencies are recorded, corresponding with the oscillation theory of this kind of molecules. The band with the frequency 1052 cm^{-1} is assigned to the valence oscillation of the group

Card 1/4

Infrared Spectra of Organolithium Compounds. Inter-   SOV/20-123-1-30/56
molecular Lithium Bond

$C^{-\delta} - Li^{+\delta}$. The accuracy of this assignment is in accordance with the spectral analysis of ethyl-, butyl-, and dodecyl lithium. Thus, the frequency of the valence oscillation, being ~ 1050 cm^{-1}, is specific for the respective series of compounds. Further proof of this fact is presented. The variation of the mentioned frequency of the C-Li group on the transition from the vaporous state to the solid and to solutions is apparently related to the fact that the C-Li groups in crystals and solutions take part in some intermolecular reactions. This in particular is shifting the C-Li-band in the direction of the long waves. Thus, the spectra show definitely that the molecules of the organolithium compounds in crystals and solutions are associated under complex formation (in conformity w th the references 3-8). If in the crystals the existence of chains is possible, in solutions with non-polar solvents the formation of associates under reduction of the entire dipole interaction is more favorable. This can be attained by

Card 2/4

Infrared Spectra of Organolithium Compounds. Inter-   SOV/20-123-1-30/56
molecular Lithium Bond

the formation of various cycles as well as by variation
of character and length of the chain. It is possible
that different types of associates are existing in the
solutions which are passing into one another on
dilution, heating and under the influence of light
in an atmosphere of nitrogen(in accordance with the
results of cryoscopy, References 4, 6-8). In the solutions
of ethyl lithium in hexane, cyclohexane, and cyclohexene
the portion of those molecules which do not take part
in the association is larger than the portion of molecules
associated . The type of association in the mentioned
solvents is different from that in aromatic hydrocarbons.
The spectra are given in figure 3. Extent and character
of association of the molecules R-Li have to depend
in the respective solutions to a considerable extent upon
the length of the carbon chain. With a prolongation of
the chain the probability of the formation of cyclic
associates might decrease, whereas the possibility
of a formation of the linear complexes must increase.

Card 3/4

Infrared Spectra of Organolithium Compounds. Inter-   SOV/20-123-1-30/56
molecular Lithium Bond

An exception is methyl lithium. Apparently, the
variation of the character and degree of association
of the R-Li molecules greatly affects the dipole
moment, according to the nature of the compound,
the concentration and the temperature. It can be assumed
that the dipole moment of ethyl lithium is approaching the
dipole moment of a free molecule in dilute hexane
solutions (as confirmed by common studies with V.N.
Vasil'yeva). The authors have found that benzene does
not participate directly in the association of ethyl
lithium. According to the results the authors concluded
that associations of organolithium compounds by an
intermolecular lithium linkage are existing. Finally,
cases of such interactions are discussed. There are
3 figures and 10 references, 3 of which are Soviet.

SUBMITTED: July 5, 1958

Card 4/4

SOV/79-29-9-9/76

5(3)

AUTHORS: Gorelik, M. V., Rodionov, A. N., Bogdanov, S. V.

TITLE: Investigation in the Field of Anthracene Oxy Derivatives. V.
             On the Problem of the Structure of Bisulfite Compounds of Nitrose
             Anthrols

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 9,
             pp 2852 - 2854 (USSR)

ABSTRACT: In previous reports (Refs 1,2) the bisulfite compounds of
             1-nitroso-2-anthrol and 4-nitroso-1-anthrol were ascribed the
             structural formulas (I) and (II). The complementary data con-
             firming the two formulas were obtained by spectral analysis.
             Already earlier, the difference shown by the ultraviolet spectra
             of 1-nitroso-2-anthrol, 1,2-anthraquinone dioxime, 1,2-anthra-
             -(3',4')-furazan, 1,2-anthra-(3',4')furoxan, as compared with
             the spectra of their bisulfite compounds, had been pointed out
             (Ref 2). A not lower change in the absorption spectra occurs
             with the formation of bisulfite compounds of 4-nitroso-1-anthrol
             (II) and of 1,4-anthraquinone dioxime (III) (Fig 1, Curves 2 and
             3; Fig 2, Curves 2 and 3). Formulas (II) and (III) explain the

Card 1/3

Investigation in the Field of Anthracene Oxy Derivatives.SOV/79-29-9-9/76
V. On the Problem of the Structure of Bisulfite Compounds of Nitrose Anthrols

spectral change as being due to the saturation of the C-C
bond of the quinoid ring in consequence of bisulfite affilia-
tion. To prove this, it was necessary to compare the absorp-
tion spectra of 1,4-anthraquinone and 2,3-dihydro-1,4-anthra-
quinone (IV). The passage of 1,4-anthraquinone (Fig 1, Curve 1)
to compound (IV) (Fig 2, Curve 1) was found to be concomitant
with an equal change in the absorption curve, the same applying
to the formation of bisulfite compounds (II) and (III). The
maximum at 265-270 mμ is typical of the system of bonds (IV),
wherein two carbonyl groups are conjugate with the aromatic
molecular part. In the derivatives of 3,4-dihydro-1,2-anthra-
quinone, in which a carbonyl group does not participate in
the conjugation process, the maximum shifts by 35-40 mμ to
the shorter wave range. The infrared spectra of compounds
(I) and (II) point to the valency oscillations C-H in the
groups CH_2. The same bands are also present in the spectra

of the other bisulfite compounds (I-III and V-VII) (Table).
The presence of the CH_2 groups in the bisulfite compounds

Card 2/3

Investigation in the Field of Anthracene Oxy Derivatives. SOV/79-29-9-9/76
V. On the Problem of the Structure of Bisulfite Compounds of Nitrose
Anthrols

of nitroso anthrols is satisfactorily explained by formulas
(I) and (II). Thus, the ultraviolet and infrared spectra of
bisulfite compounds confirm the structure that had been
earlier suggested for them. There are 2 figures, 1 table,
and 5 references, 2 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut organicheskikh poluproduk-
tov i krasiteley imeni Voroshilova (Scientific Research In-
stitute of Organic Intermediates and Dyestuffs imeni Voro-
shilov). Fiziko-khimicheskiy institut imeni Karpova (Physico-
chemical Institute imeni Karpov)

SUBMITTED: July 25, 1958

Card 3/3

SOV/20-125-3-27/63

5(2,4)

AUTHORS:

Rodionov, A. N., Vasil'yeva, V. N., Talalayeva, T. V., Shigorin, D. N., Gur'yanova, Ye. N., Kocheshkov, K. A., Corresponding Member, AS USSR

TITLE: Intermolecular Lithium Bond, Its Influence Upon the Vibration Spectra of Molecules and Upon the Dipole Moments (Mezhmolekulyarnaya litiyevaya svyaz', yeye vliyaniye na kolebatel'nyye spektry molekul i dipolnyye momenty)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 3, pp 562-565 (USSR)

ABSTRACT: In an earlier paper (Ref 1) the authors proved the formation of a bond referred to in the title $-\overset{-\delta}{C}H_2-\overset{+\delta}{Li}\ldots\overset{-\delta}{C}H_2-\overset{+\delta}{Li}$ (I) and R-O-Li...O-Li (II). The lithium bond like the hydrogen bond is a secondary chemical bond (Ref 2). Type (I) was closely investigated on the basis of infrared absorption spectra. In the work under review, infrared spectra of Alk-Li compounds with a varying length of the radical chain were solved in hexane and investigated at various concentrations. The aim was to clarify

Card 1/3

SOV/20-125-3-27/63

Intermolecular Lithium Bond, Its Influence Upon the Vibration Spectra of Mole-
cules and Upon the Dipole Moments

the dependence of the intermolecular space, of the stability of
the lithium bond and also of the magnitude of the frequency
displacement of the groups C-Li on the length and on the struc-
ture of the carbon radical. Table 1 as well as figures 1 and 2
illustrate the results obtained. As may be observed therefrom,
the value of the displacement of the said groups actually de-
creases with increasing chain length. Thus also the stability of
the lithium bond in the complexes decreases. The investigation
of the solutions of ethyl, n-butyl, and n-amyl lithium in hexane
showed a linear course of the dependence of the dielectricity
constant on the concentration in the case of lower concentra-
tions. This course diverges from the straight line on an in-
crease of concentration (0.4-3.0 mols %). The dipole moment of
ethyl lithium in benzene remains constant between 0.08-0.43 mols%
and amounts to 0.87 D. The variation of the dipole moment in
the complex, connected with the formation of lithium, goes
back on the whole to the action of this bond upon the type of
orientation of the dipoles with respect to one another. There-
fore, the formation of cyclic complexes and especially the type

Card 2/3

SOV/20-125-3-27/63

Intermolecular Lithium Bond, Its Influence Upon the Vibration Spectra of Molecules and Upon the Dipole Moments

of the "quadrupoles" must decrease the dipole moment. This apparently takes place in the ethyl lithium solutions in benzene. It follows from the above that alkyl lithium molecules are associated both in benzene and in hexane solutions. The character of the associate depends both on the nature of the solvent and on the radical composition. The lithium bond considerably influences the frequency variations of the vibrations of the C-Li groups and also the dipole moments of the complexes; these variations here depend on the radical length, on the concentration of the solutions, and also on the nature of the solvent. There are 2 figures, 1 table, and 3 references, 2 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Scientific Physico-chemical Research Institute imeni L. Ya. Karpov)

SUBMITTED: December 29, 1958
Card 3/3

·5 (2;3,4)

AUTHORS: Rodionov, A. N., Talalayeva, T. V.,   SOV/20-128-4-26/65
             Shigorin, D. N., Kocheshkov, K. A.,
             Corresponding Member AS USSR

TITLE: The Infrared Spectra and Structure of Aromatic Organolithium
             Compounds

ABSTRACT: There are very few experimental data on the compounds mentioned
             in the title (Refs 1,2). To clarify the structure of these sub-
             stances, the infrared absorption spectra of phenyl-, o- and
             p-tolyl-, mesityl-, p-diphenyl-, p-chlorophenyl-, p-bromo-
             phenyl-, p-iodophenyl-, as well as α- and β-naphthyl lithium
             were measured. These aromatic compounds are crystalline sub-
             stances, and not soluble either in hexane or benzene. Therefore,
             the spectra of their powders were measured in vaseline- and
             fluorated oil. Table 1 shows that in these spectra several new
             bands appear which are in a certain connection with the C—Li
             bond. The data in table 1, as well as a comparison with spectra
             of aliphatic compounds previously described by the authors
Card 1/4   (Ref 5), lead to the conclusion that the band in the range of